SEQUENCE LISTING

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cb

<120> GENE CODING FOR HELIOMICINE, AND USE THEREOF

<130> A33595-PCT-USA (0726667.0166)

<140> 09/673,274
<141> 1999-04-12

<150> PCT/FR99/00843
<151> 1999-04-12

<150> FR 98 04933
<151> 1998-04-15

<160> 48

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 147
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 1
agcttggata aaagagacaa gttgattggc agctgtgttt ggggcgccgt caactacact 60
agtgactgca acggcgagtg caagcgccgc ggttacaagg gtggccattg tggatccttc 120
gctaacgtta actgttggtg tgaaacc 147

<210> 2
<211> 169
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 2
gataagctta tcggttcctg cgtgtggggt gctgtgaact acacttccga ttgcaacggt 60
gagtgcaaga ggaggggtta caagggtggt cactgcggtt ccttcgctaa cgtgaactgc 120
tggtgcgaga cttgagagct cggcgaggcg aacgtgtcga cggatccgg 169

<210> 3
<211> 261
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 3
ccatgggttt cgtgcttttc tctcagcttc catctttcct tcttgtgtct actcttcttc 60
ttttccttgt gatctctcac tcttgccgtg ccgataagct tatcggttcc tgcgtgtggg 120
gtgctgtgaa ctacacttcc gattgcaacg gtgagtgcaa gaggaggggt tacaagggtg 180
gtcactgcgg ttccttcgct aacgtgaact gctggtgcga gacttgagag ctcggcgagg 240
cgaacgtgtc gacggatccg g 261

<210> 4
<211> 120
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 4
gcgtcgacgc gatgggtttc gtgcttttct ctcagcttcc atctttcctt cttgtgtcta 60
ctcttcttct tttccttgtg atctctcact cttgccgtgc tggagacgcg aattcacaca 120

<210> 5
<211> 75
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 5
gcgtcgacgc gatgggtttc gtgcttttct ctcagcttcc atctttcctt cttgtgtcta 60
ctcttcttct tttcc 75

<210> 6
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 6
tcgccggcac ggcaagagta agagatcaca aggaaaagaa gaagagtaga cacaagaagg 60
aaagatggaa gc 72

<210> 7
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 7
gataagctta tcggttcctg cgtgtggggt gctgtgaact acacttccga ttgcaacggt 60
gagtgcaaga ggaggggtta 80

<210> 8
<211> 109
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 8
ccggatccgt cgacacgttc gcctcgccga gctctcaagt ctcgcaccag cagttcacgt 60
tagcgaagga accgcagtga ccacccttgt aacccctcct cttgcactc 109

<210> 9
<211> 85
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 9
agggcccccc agggtttaaa cggccagtca ggccgaattc gagctcggta cccggggatc 60
ctctagagtc gacctgcagg catgc 85

<210> 10
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 10
ccctgaacca ggctcgaggg cgcgccttaa ttaaaagctt gcatgcctgc aggtcgactc 60
tagagg 66

<210> 11
<211> 93
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<220>
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<400> 11
ccggccagtc aggccacact taattaagtt taaacgcggc cccggcgcgc ctaggtgtgt 60
gctcgagggc ccaacctcag tacctggttc agg 93

<210> 12
<211> 93
<212> DNA
<213> Artificial Sequence

<220>
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<400> 12
ccggcctgaa ccaggtactg aggttgggcc ctcgagcaca cacctaggcg cgccggggcc 60
gcgtttaaac ttaattaagt gtggcctgac tgg 93

<210> 13
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 13
ggtctagaat ggcctgcacc aacaacgcca tgagggccct cttcctcctc 50

<210> 14
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 14
ccgaattcgg cgccgtgcac gatgcagaag agcacgagga ggaagagggc 50

<210> 15
<211> 81
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 15
tctagaatgg cctgcaccaa caacgccatg agggccctct tcctcctcct gctcttctgc 60
atcgtgcacg gcgccgaatt c 81

<210> 16
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 16
gataagctta tcggttcctg cgtg 24

<210> 17
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 17
ggctcgagtc aagtctcgca ccagcagttc ac 32

<210> 18
<211> 213
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 18
tctagaatgg cctgcaccaa caacgccatg agggccctct tcctcctcct gctcttctgc 60
atcgtgcacg gcgataagct tatcggttcc tgcgtgtggg gtgctgtgaa ctacacttcc 120
gattgcaacg gtgagtgcaa gaggaggggt tacaagggtg gtcactgcgg ttccttcgct 180
aacgtgaact gctggtgcga gacttgactc gag 213

<210> 19
<211> 838
<212> DNA
<213> Artificial Sequence

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<221> promoter
<222> (7)...(532)

<221> misc_structure
<222> (533)...(568)

<221> terminator
<222> (569)...(832)

<400> 19
aagcttccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacgggaaaa 60
actatggaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaagc 240
actgacgaca acaatgaaaa gaagaagata aggtcggtga ttgtgaaaga gacatagagg 300
acacatgtaa ggtggaaaat gtaagggcgg aaagtaacct tatcacaaag gaatcttatc 360
ccccactact tatcctttta tatttttccg tgtcattttt gcccttgagt tttcctatat 420
aaggaaccaa gttcggcatt tgtgaaaaca agaaaaaatt tggtgtaagc tatttttctt 480
gaagtactga ggatacaact tcagagaaat ttgtaagttt gtagatctcg attctagaag 540
gcctgaattc gagctcggta ccggatccaa ttcccgatcg ttcaaacatt tggcaataaa 600
gtttcttaag attgaatcct gttgccggtc ttgcgatgat tatcatataa tttctgttga 660
attacgttaa gcatgtaata attaacatgt aatgcatgac gttatttatg agatgggttt 720
ttatgattag agtcccgcaa ttatacattt aatacgcgat agaaaacaaa atatagcgcg 780
caaactagga taaattatcg cgcgcggtgt catctatgtt actagatcgg ggatcgat 838

<210> 20
<211> 1036
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<221> promoter
<222> (7)...(532)

<221> CDS
<222> (539)...(736)

<221> terminator
<222> (767)...(1030)

<400> 20
aagcttccag aaggtaatta tccaagatgt agcatcaaga atccaatgtt tacgggaaaa 60
actatggaag tattatgtga gctcagcaag aagcagatca atatgcggca catatgcaac 120
ctatgttcaa aaatgaagaa tgtacagata caagatccta tactgccaga atacgaagaa 180
gaatacgtag aaattgaaaa agaagaacca ggcgaagaaa agaatcttga agacgtaagc 240
actgacgaca acaatgaaaa gaagaagata aggtcggtga ttgtgaaaga gacatagagg 300
acacatgtaa ggtggaaaat gtaagggcgg aaagtaacct tatcacaaag gaatcttatc 360
ccccactact tatcctttta tatttttccg tgtcattttt gcccttgagt tttcctatat 420
aaggaaccaa gttcggcatt tgtgaaaaca agaaaaaatt tggtgtaagc tattttcttt 480
gaagtactga ggatacaact tcagagaaat ttgtaagttt gtagatctcg attctaga 538
atg gcc tgc acc aac aac gcc atg agg gcc ctc ttc ctc ctc gtg ctc 586
Met Ala Cys Thr Asn Asn Ala Met Arg Ala Leu Phe Leu Leu Val Leu
 1   5   10   15

ttc tgc atc gtg cac ggc gat aag ctt atc ggt tcc tgc gtg tgg ggt 634
Phe Cys Ile Val His Gly Asp Lys Leu Ile Gly Ser Cys Val Trp Gly
            20   25   30

gct gtg aac tac act tcc gat tgc aac ggt gag tgc aag agg agg ggt 682
Ala Val Asn Tyr Thr Ser Asp Cys Asn Gly Glu Cys Lys Arg Arg Gly
        35   40   45

tac aag ggt ggt cac tgc ggt tcc ttc gct aac gtg aac tgc tgg tgc 730
Tyr Lys Gly Gly His Cys Gly Ser Phe Ala Asn Val Asn Cys Trp Cys
    50   55   60

gag act tgactcgagg gggggcccgg taccggatcc aattcccgat cgttcaaaca 786
Glu Thr
 65

tttggcaata aagtttctta agattgaatc ctgttgccgg tcttgcgatg attatcatat 846
aatttctgtt gaattacgtt aagcatgtaa taattaacat gtaatgcatg acgttattta 906
tgagatgggt ttttatgatt agagtcccgc aattatacat ttaatacgcg atagaaaaca 966
aaatatagcg cgcaaactag gataaattat cgcgcgcggt gtcatctatg ttactagatc 1026
ggggatcgat 1036

<210> 21
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 21
agcttggata aaagagacaa gttgattggc agctgtgttt ggggcgccgt ca 52

<210> 22
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 22
agtgtagttg acggcgcccc aaacacagct gccaatcaac ttgtctcttt tatcca 56

<210> 23
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 23
actacactag tgactgcaac ggcgagtgca agcgccgcgg ttacaagggt gg 52

<210> 24
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 24
cacaatggcc acccttgtaa ccgcggcgct tgcactcgcc gttgcagtca ct 52

<210> 25
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 25
ccattgtgga tccttcgcta acgttaactg ttggtgtgaa acctgatagg tcgaca 56

<210> 26
<211> 52
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 26
gatctgtcga cctatcaggt ttcacaccaa cagttaacgt tagcgaagga tc 52

<210> 27
<211> 42

<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 27
gatccttcgc taacgttaac tgttggtgta gaacctgata gg 42

<210> 28
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 28
tcgacctatc aggttctaca ccaacagtta acgttagcga ag 42

<210> 29
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 29
ctagtgactg caacggcgag tgcttgttgc gc 32

<210> 30
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 30
gcaacaagca ctcgccgttg cagtca 26

<210> 31
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 31
ctagtgactg cgctgctgag tgcaagcggc gc 32

<210> 32
<211> 26
<212> DNA
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<220>
<223> Synthetic oligonucleotide

<400> 32
gccgcttgca ctcagcagcg cagtca 26

<210> 33
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 33
agcttggata aaagagctgc tgctgctggt agctgtgttt 40

<210> 34
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
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<400> 34
ggggcgccgt caactaca 18

<210> 35
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 35
ctagtgtagt tgacggcgcc cc 22

<210> 36
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 36
aaacacagct accagcagca gcagctcttt tatcca 36

<210> 37
<211> 32
<212> DNA
<213> Artificial Sequence

<220>

<223> Synthetic oligonucleotide

<400> 37
ctagtgactg cgctgctgag tgcttgttgc gc 32

<210> 38
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Synthetic oligonucleotide

<400> 38
gcaacaagca ctcagcagcg cagtca 26

<210> 39
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (1)...(10)
<223> region of variable length from 1 to 10 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (12)...(21)
<223> region of variable length from 1 to 10 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (23)...(25)
<223> Xaa = any amino acid

<221> VARIANT
<222> (27)...(35)
<223> region of variable length from 1 to 9 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (37)...(43)
<223> region of variable length from 1 to 7 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (45)...(45)
<223> Xaa = any amino acid

<221> VARIANT
<222> (47)...(51)
<223> region of variable length from 1 to 5 amino acids
where Xaa = any amino acid

<400> 39
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa
1 5 10 15
Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa
20 25 30
Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Xaa Cys Xaa Xaa
35 40 45
Xaa Xaa Xaa
50

<210> 40
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (2)...(2)
<223> Xaa = any basic amino acid

<221> VARIANT
<222> (3)...(7)
<223> region of variable length from 0 to 5 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (1)...(9)
<223> Xaa = Any Amino Acid

<400> 40
Lys Xaa Xaa Xaa Xaa Xaa Xaa Gly His
1 5

<210> 41
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 41
Lys Arg Arg Gly Tyr Lys Gly Gly His
1 5

<210> 42
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (1)...(9)
<223> region of variable length from 0 to 9 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (11)...(11)
<223> Xaa = any amino acid

<221> VARIANT
<222> (1)...(11)
<223> Xaa = Any Amino Acid

<400> 42
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa
1 5 10

<210> 43
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (2)...(9)
<223> region of variable length from 0 to 8 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (1)...(10)
<223> Xaa = Any Amino Acid

<400> 43
Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Asp
1 5 10

<210> 44
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (2)...(6)
<223> region of variable length from 0 to 5 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (1)...(7)
<223> Xaa = Any Amino Acid

<400> 44
Gly Xaa Xaa Xaa Xaa Xaa Asn
1 5

<210> 45
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<221> VARIANT
<222> (2)...(5)
<223> region of variable length from 0 to 4 amino acids
where Xaa = any amino acid

<221> VARIANT
<222> (1)...(5)
<223> Xaa = Any Amino Acid

<400> 45
Glu Xaa Xaa Xaa Xaa
1 5

<210> 46
<211> 6
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 46
Asp Lys Leu Ile Gly Ser
1 5

<210> 47
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Synthetic peptide

<400> 47
Val Trp Gly Ala Val Asn Tyr Thr Ser Asp
1 5 10

<210> 48
<211> 6
<212> PRT

<213> Artificial Sequence

<220>
<223> Synthetic peptide

c6 cont

<400> 48
Gly Ser Ala Asn Val Asn
1 5